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New records of *Peperomia armondii* Yunck, *Peperomia hispidula* (Sw.) A. Dietr., and *Peperomia mandioccana* Miq. for the state of Espírito Santo, southeastern Brazil

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Abstract: We present here the first record of *Peperomia armondii*, *P. hispidula* and *P. mandioccana* for the state of Espírito Santo, Brazil. Taxonomic comments, a distribution map and images of these species are presented.

Key words: Piperaceae, Atlantic Forest, geographic distribution

Peperomia Ruiz & Pav. is a pantropical genus holding about 1,600 species, and regarded as one of the largest genera of flowering plants (Frodin 2004; Samain et al. 2009). Its species preferentially inhabit moist and shady places within rainforests (Carvalho-Silva and Guimarães 2008) and are characterized by a terrestrial, epiphytic or rupiculous herbaceous habit. *Peperomia* spp. have alternate, opposite to verticillate leaves, inflorescences in spikes, small and numerous flowers with one pistil and two lateral stamens and protected by a peltate bract, and drupe fruits (Yuncker 1974). In Brazil, 162 species are recorded, with most of them being restricted to the Atlantic Forest (138 species). In Espírito Santo state, 48 species are found and four of them are endemics (Guimarães et al. 2013).

Espírito Santo state was entirely covered by the Atlantic Forest and just 11% of its original forest coverage still remains (SOS Mata Atlântica 2011). Several studies show high species richness for several taxa in this state, as for tree species (Thomaz and Monteiro 1997), Bromeliaceae (Wendt et al. 2010), Malpighiaceae (Almeida and Mamede 2014) birds (Simon 2000), lepidoptera (Brown Jr. and Freitas 2000) and non-volant mammals (Passamani et al. 2000). Werneck et al. (2011) showed a high level of endemism in Espírito Santo and called attention to biological importance of the state.

This study results from fieldwork and herbaria research within the "Flora do Espírito Santo" project and focuses on the family Piperaceae. The first records for three species in the state of Espírito Santo are presented (*Peperomia armondii* Yunck., *P. hispidula* (Sw) A. Dietr., and *P. mandioccana* Miq.) along with a distribution map and images of these species.

Peperomia armondii

Peperomia armondii is characterized by rupicolous or epiphytes herbs, stoloniferous, decumbent, with villous stems and leaves (Figure 1) (Yuncker 1966; Zanotti and Biganzoli 2010). It was originally described for the states of Santa Catarina, Rio de Janeiro and Bahia (Yuncker 1966), and was cited in "The Piperaceae of Brazil" (Yuncker 1974) and "Flora Ilustrada Catarinense" (Guimarães et al. 1984) with that same material examined. Zanotti and Biganzoli (2010) extended its distributional range to Missiones, Argentina. Guimarães and Carvalho-Silva (2012) reported this species from the state of São Paulo, and Guimarães et al. (2013) extended its distribution for states of Minas Gerais, Paraná and Rio Grande do Sul, excluding Santa Catarina.

This species was found (Figure 2) into two locations, both within Conservation Units in Vitória's Metropolitan Area (state of Espírito Santo): Área de Proteção Ambiental Mestre Álvaro (municipality of Serra) and Reserva Biológica de Duas Bocas (municipality of Cariacica).

Specimens examined: Brazil: Espírito Santo: Cariacica, REBIO Duas Bocas, 20 October 2008, fl. *L. Kollmann 11218* (RB, MBML); Serra, APA Mestre Álvaro, 23 January 2013, fl. fr., *V. B. Sarnaglia Junior et al. 571* (RB); Serra, APA Mestre Álvaro, 75 m elevation, 23 January 2013, fl., *V. B. Sarnaglia Junior et al. 572* (RB).

Peperomia hispidula

Peperomia hispidula is characterized by the ovate to rhombic leaves, hispid hairs, stipitate, and by stylose fruits

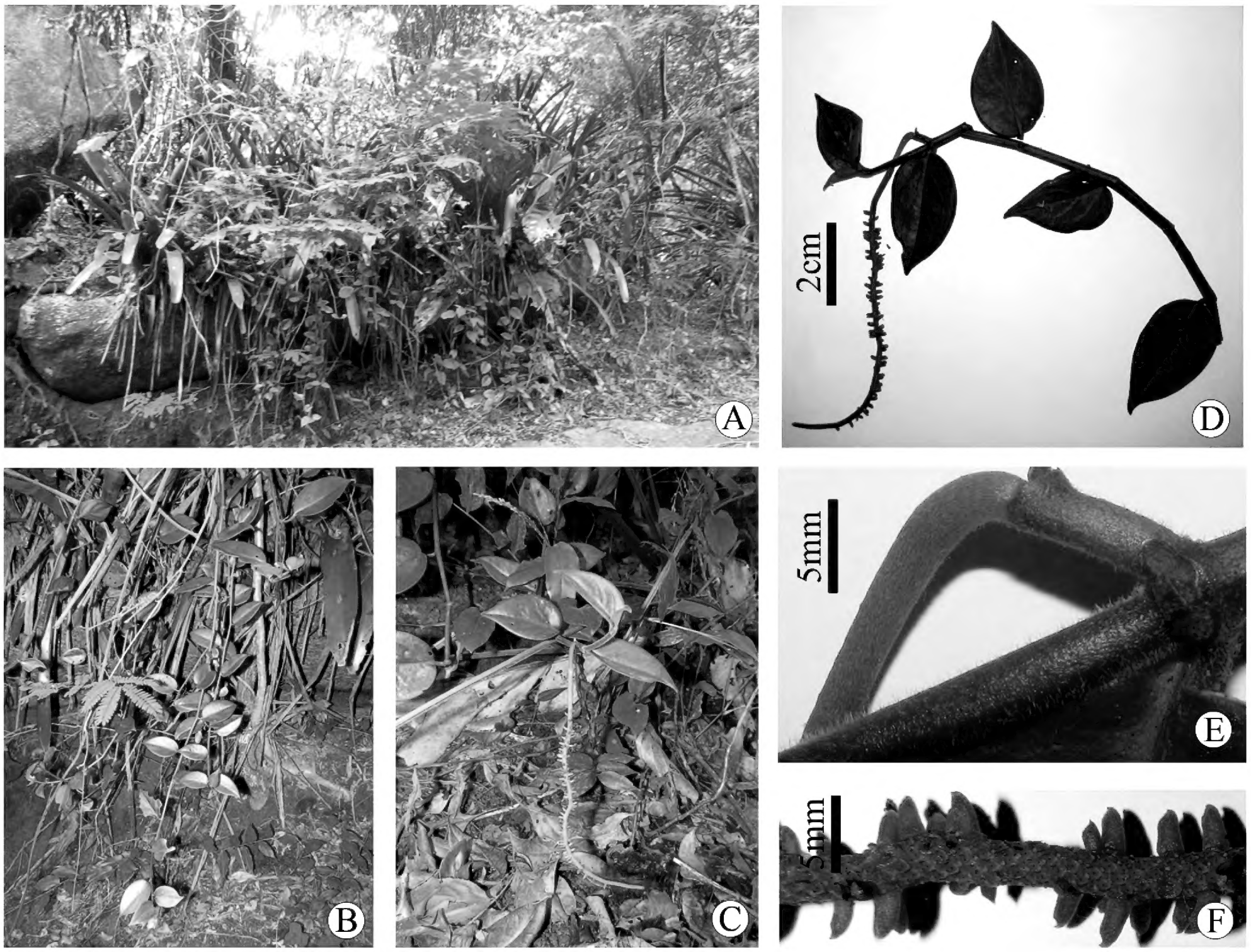

Figure 1. *Peperomia armondii* (*Sarnaglia Junior et al. 571*). **A**) Habitat at APA do Mestre Álvaro, Serra – ES, Brazil. **B**) Stems. **C**) Spike. **D**) Herborized stems. **E**) Villous stems. **F**) Detail of the spike with fruits.

(Figure 3) (Yuncker 1974). It was originally described by Swarts (1788) as *Piper hispidulum* Sw. and synonymized with *Peperomia hispidula* by Dietrich (1831). The range distribution of this species is from Mexico to Argentina (Yuncker 1974; Keller and Tressens 2005; Mobot 2013), in Brazil it was cited to Rio Grande do Sul, Paraná, Santa Catarina, São Paulo, Rio de Janeiro and Minas Gerais (Yuncker 1974; Guimarães et al. 2013).

This species was found in the municipality of Iuna, in Serra do Caparaó, southwestern Espírito Santo state (Figure 2).

Specimens examined: Brazil: Espírito Santo: Iúna, Serra do Valentim, track's end of property of Mr. Plínio Silveira, 1,270 m elevation, 23 June 2012, fr. *Zorzanelli, J.P.F and Silveira, P. 400* (VIES, RB).

Peperomia mandioccana

Peperomia mandioccana is characterized by small stoloniferous-erect herbs, hirtellous, opposite leaves, frequently alternate downwardly, yellow glandular dots; spikes up to 3.5 cm long and drupes with a pseudocupule (Figure 4) (Yuncker 1974). It was originally described by Miquel (1847) with specimens from the state of Rio de

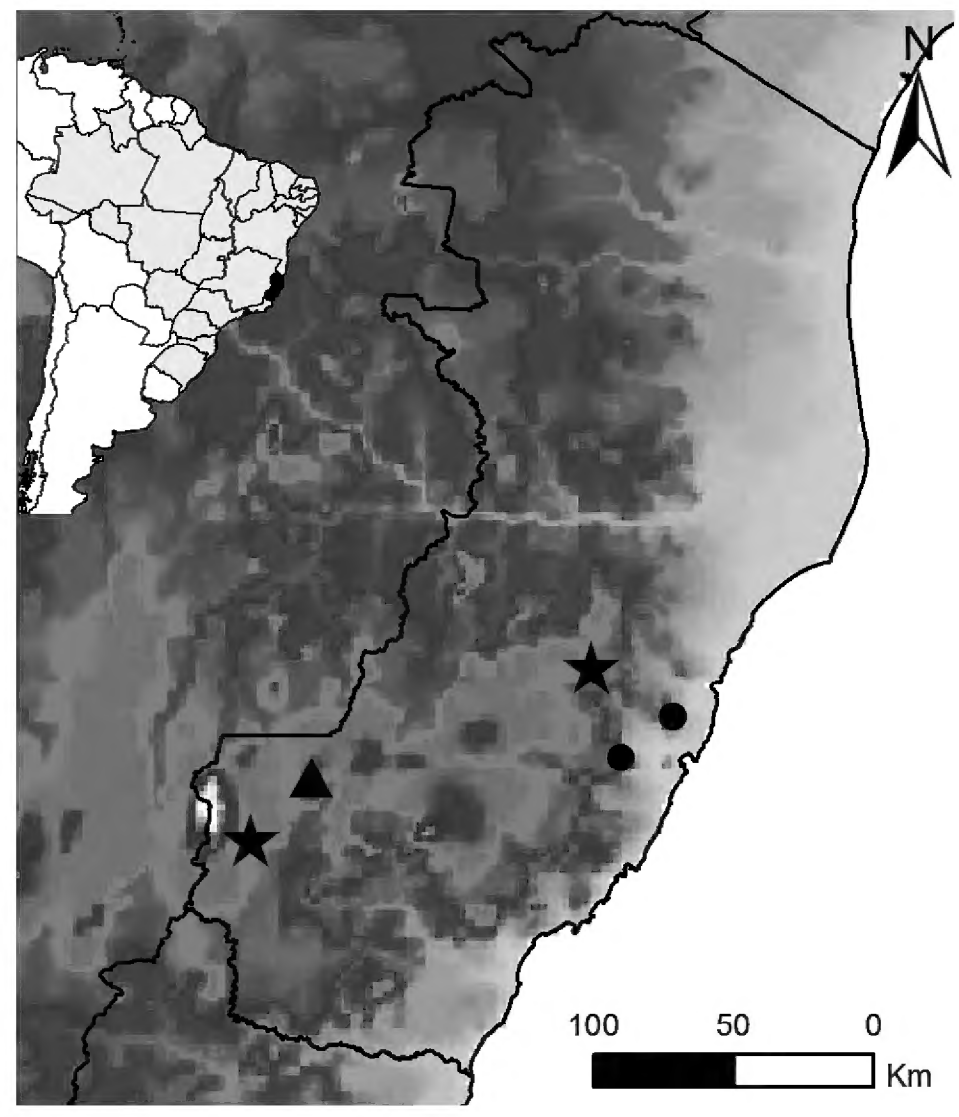

Figure 2. Location of the new records in Espírito Santo state, Brazil: *P. armondii* (dots), *P. hispidula* (triangle), and *P. mandioccana* (stars).

Janeiro. Yuncker (1974) and Guimarães and Carvalho-Silva (2012) extended its distribution for the state of Minas Gerais and São Paulo, respectively. Guimarães et al. (2013) extended its distribution to Santa Catarina and Paraná.

This species was found in two locations in Espírito Santo: Parque Nacional do Caparaó, in the municipality of Ibitirama in southwestern Espírito Santo state, and in the municipality of Santa Teresa in the mountain region of the state (Figure 2).

SPECIMENS EXAMINED: Brazil: Espírito Santo: Ibitirama, Santa Marta, Parque Nacional do Caparaó, 1,350 m elevation, 12 June 2012, fr., *Dias, H.M. et al. 728* (VIES, RB). Santa Teresa, Valsugana Velha, 945 m elevation, 3 Febuary 2013, fr., *Sarnaglia Jr., V. B. and Lírio, E. J. 634*.

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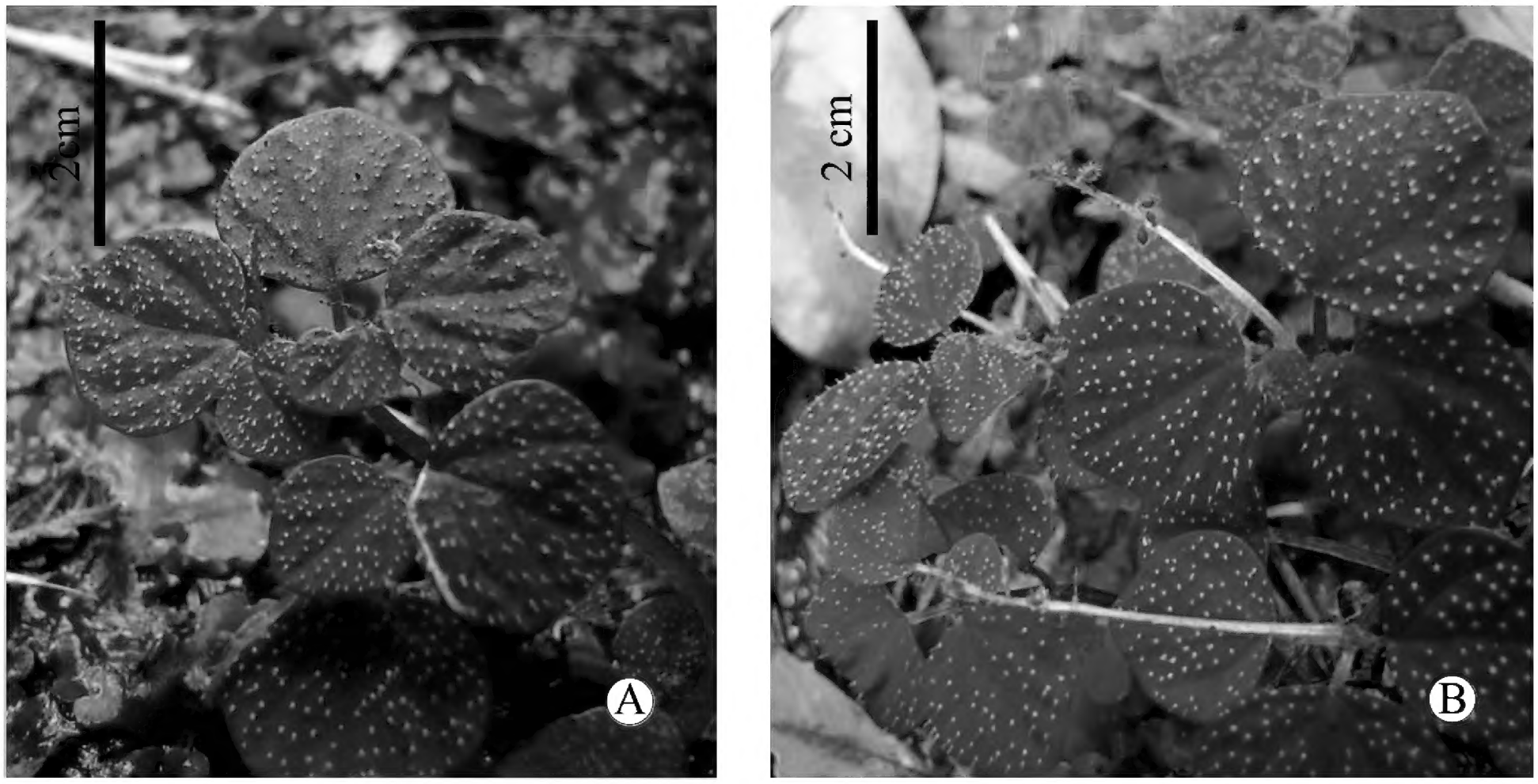

Figure 3. *Peperomia hispidula* (*Zorzanelli*, *400*). **A–B**) Habitat (photo by João P. F. Zorzanelli). **C**) Stipitate fruits. **D**) Hispid hairs on the leaves.

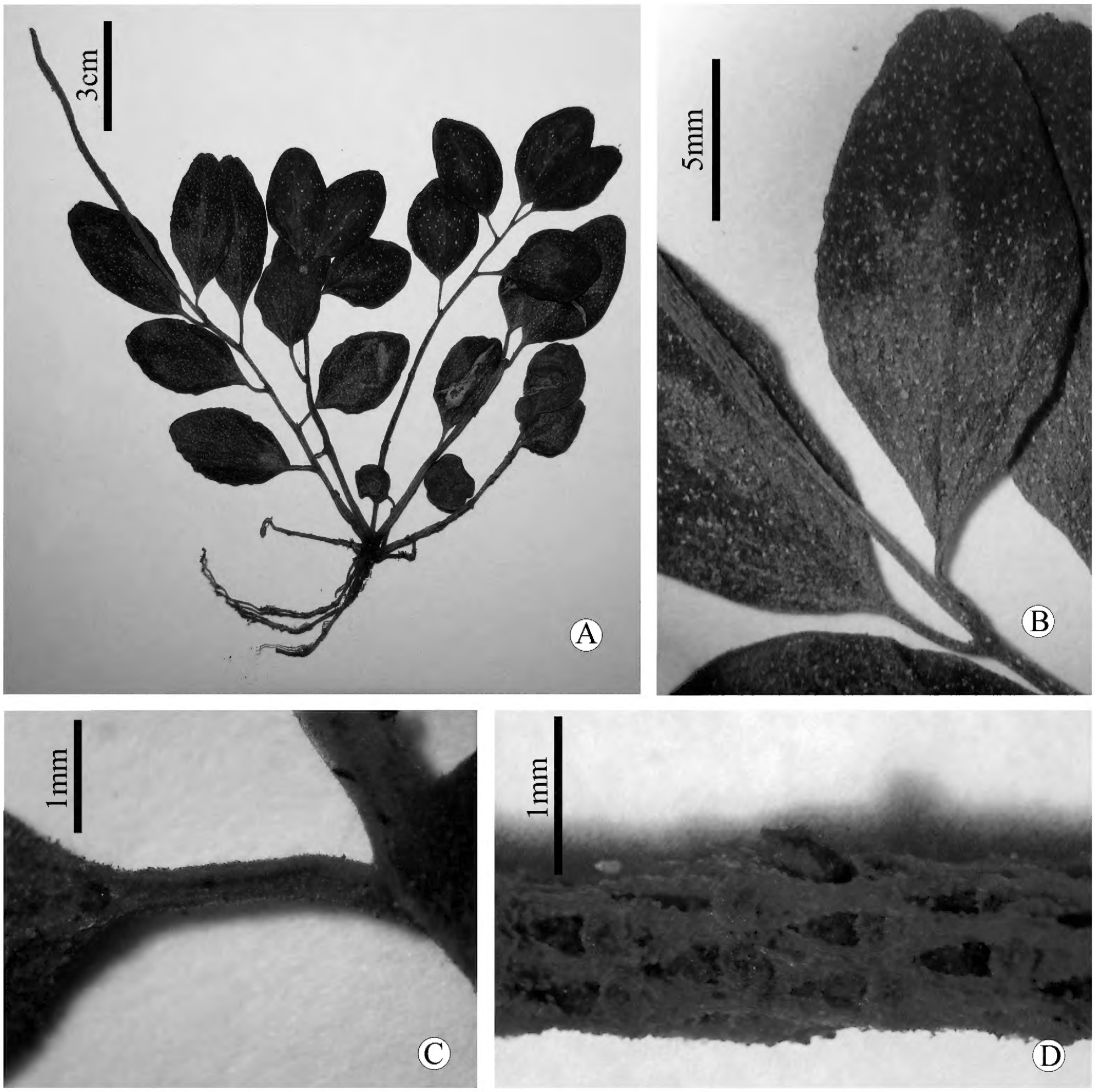

Figure 4. *Peperomia mandioccana* (*Dias, 728*). **A**) Habitat. **B**) Leaves. **C**) Hirtellous petiole and stems. **D**) Verruculose rachis and fruit.

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